ENERGY AND ENVIRONMENT CABINET

Department for Natural Resources

Division of Oil and Gas

(Amendment)

805 KAR 1:110. Underground injection control.

RELATES TO: KRS 353.180(3), 353.510, 353.520, 353.550, 353.570(1), (2), 353.590, 353.992, 40 C.F.R. 146.6, 42 U.S.C. 300j-6

STATUTORY AUTHORITY: KRS 353.540, 353.550, 353.560, 353.592

NECESSITY, FUNCTION, AND CONFORMITY: KRS 353.540 authorizes the Department for Natural Resources to administer and enforce the provisions of KRS 353.500 to 353.720. The waste of oil and gas is prohibited by KRS 353.520, which provides that prohibited waste includes the unreasonable damage to underground fresh or mineral water supply, workable coal seams, or other mineral deposits in the operations for the discovery, development, production, or handling of oil and gas; the unnecessary or excessive surface loss or destruction of oil or gas or their constituents; and the drowning with water of any stratum or part thereof capable of providing oil or gas in paying quantities, except for secondary recovery or disposal purposes, or in hydraulic fracturing or other completion practices. KRS 353.592 authorizes the department to develop a regulatory program for the purpose of accepting primary responsibility for the administration of the Underground Injection Control Program. This administrative regulation establishes requirements for the drilling, casing, operation, plugging, construction, conversion, and maintenance of Class II wells

and the protection of fresh water zones from contamination associated with the production of oil and gas.

Section 1. Definitions. The definitions contained in KRS 353.510 and the following additional definitions shall apply to this administrative regulation:

(1) "Administrator" means the regional administrator for Region IV of U.S. EPA.

(2) "Aquifer" means an underground geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

(3) "Area of review" means that area within not less than a fixed radius of one-fourth (1/4) mile around an injection well, except that at the request [~~option~~] of the permit applicant and approval of the director, the area of review may be deemed to be the zone of endangering influence calculated in accordance with 40 C.F.R. 146.6.

(4) "Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and prevent the walls from caving, to prevent loss of drilling mud or fluids into porous ground or to prevent water, gas, or other fluid from entering or leaving the hole.

(5) "Cementing" means the operation in which a cement slurry is displaced around the casing's annulus using approved engineering methods.

(6) "Class II well" means a well which injects fluids:

(a) Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste when injected;

(b) For enhanced recovery of oil or natural gas; [~~or~~]

(c) For permanent disposal of produced brine water; or

(d) For storage of hydrocarbons which are liquid at standard temperature and pressure.

(7) "Commercially producible" means a well which may be used commercially for the production of oil and gas or for Class II injection.

(8) "Confining zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

(9) "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

(10) "Date of primacy" means the effective date of the Administrator's approval of Kentucky's Underground Injection Control (UIC) Program made pursuant to Section 1425 of the Safe Drinking Water Act as codified in 42 U.S.C. 300h-4.

(11) "Division" means the Kentucky Division of Oil and Gas [~~Conservation~~].

(12) "Endangerment" means that an injection operation may result in the presence of a contaminant in ground water, which supplies or may reasonably be expected to supply any public water system, and [~~that~~] the presence of that contaminant, or any contaminant, may result in violation of any national primary drinking water regulation or may otherwise adversely affect the health of persons.

(13) "EPA" means the United States Environmental Protection Agency.

(14) "Flow rate" means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, or turbine or passes along a conduit or channel.

(15) "Fluid" means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or other form or state.

(16) "Formation breakdown pressure" means indicated values from data recorded prior to and during squeeze cementing, acidizing, or hydraulic fracturing treatments performed by appropriate service companies. These breakdown pressure values are frequently reported as the surface gauge pressure which shall, through appropriate engineering calculations, be modified to reflect the pressure at which an exposed formation fractures and allows fluid to be injected into the formation.

(17) [~~"Freshwater" means an underground source of drinking water.~~

~~(18)~~] "Freshwater zone" means an underground source of drinking water.

(18)[~~(19)~~] "Ground water" means water below the land surface in an aquifer's zone of saturation.

(19)[~~(20)~~] "Injection well' means a well into which fluids are being injected.

(20)[~~(21)~~] "Injection zone" means a geological formation, group of formations, or part of formation receiving fluids through a well.

(21)[~~(22)~~] "Mechanical integrity" means a condition of injection wells which exists if there is not leakage in the well's casing, tubing, or packer and if there is not fluid movement into an underground source of drinking water through vertical channels adjacent to the well bore.

(22)[~~(23)~~] "Owner or operator" means the company or person having secured a permit for:

(a) A new or converted well; or

(b) A rule authorized well in operation prior to the effective date or primacy, as defined in subsection (10) of this section.

(23)[~~(24)~~] "Packer" means a device lowered into a well to produce a fluid-tight seal.

(24)[~~(25)~~] "Plugging" means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation by the placement of cement plugs in the wellbore.

(25)[~~(26)~~] "Project" means a group of wells in a single operation.

(26)[~~(27)~~] "Public water system" means a system for the provision to the public of piped water for human consumption, if the system has at least fifteen (15) service connections or regularly serves at least twenty-five (25) individuals.

(27)[~~(28)~~] "Underground source of drinking water or "USDW" means an aquifer or its portion, which is not an exempted aquifer and which:

(a) supplies any public water system; or

(b) contains a sufficient quantity of groundwater to supply a public system; and

1. Currently supplies drinking water for human consumption; or

2. Contains less than 10,000 mg/l total dissolved solids.

(28)[~~(29)~~] "Well" means a borehole drilled, or proposed to be drilled, for the purpose of:

(a) Producing natural gas or petroleum, or one through which natural gas or petroleum is being produced; or

(b) Injecting water, gas, or other fluid or one into which water, gas, or other fluid is being produced.

Section 2. General. (1) A person shall not drill a Class II well without first obtaining a permit to drill pursuant to KRS 353.570(1) and (2).

(2) A person shall not inject fluids to the subsurface through a Class II well without the authorization of the division in the form of a permit issued pursuant to Section 11 of this administrative regulation.

(3) The owner or operator of a Class II well shall maintain financial responsibility and resources to close, plug, and abandon the underground injection operation pursuant to the requirements in Section 8 of this administrative regulation.

(4) The fee requirements for an application to drill a new Class II injection well pursuant to KRS 353.590(2)(a) and a fifty (50) dollar fee pursuant to KRS 353.590(2)(b) shall suffice for and be applicable to the permit to inject.

(5) The permit to operate any Class II well may be transferred to a successor only after notice is given to the division on the Well Transfer for UIC Wells, Form OG[~~ED~~]-26, and shall include at least the following:

(a) The original operator's company name and address;

(b) The successor's company name and address;

(c) The permit number of the well;

(d) The Carter Coordinate location;

(e) The farm name and well number;

(f) Signatures of the original operator and the successor or that of their official representatives; and

(g) A statement that the successor assumes all responsibility for the well and provides financial responsibility pursuant to Section 8 of this administrative regulation.

(6) A Class II well with an outstanding noncompliance shall not be transferred, unless the successor is willing to correct deficiencies and submit a corrective action plan which is approved by the division pursuant to subsection (11) of this section.

(7) A Class II well shall be plugged in the manner established in 805 KAR 1:060 [~~and 805 KAR 1:070, whichever is applicable~~].

(8) An injection permit shall not be issued unless the applicant demonstrates that the Class II well will not cause the endangerment of a USDW.

(9)(a) If the casing and cementing of a Class II well is inadequate and movement of fluids cause the endangerment of a USDW, the division shall require the owner or operator of a well to take necessary corrective action.

(b) Corrective action shall be completed within ninety (90) days of notification from the division to the owner or operator.

(c) Injection shall not be authorized until the corrective action has been completed and mechanical integrity has been demonstrated.

(10)(a) In administering and applying this administrative regulation, the division shall, as practicable, take into account the varying geologic, hydrological, and historical conditions in different areas within the state.

(b) The division may, if consistent with other provisions of this section, upon submittal of the Class II Well Permit Application for Underground Injection Control, Form OG[~~ED~~]-14 and after notice and hearing, grant a variance from any requirement established in subsection (8) of this section upon a demonstration that alternate prudent engineering practices will protect a USDW.

(11) The division may modify, suspend, or revoke a Class II well permit if the injection operation is altered in a way that does not adequately protect the USDW or if a mechanical integrity failure or downhole condition compromises the injection system.

Section 3. Exempted Aquifers. An aquifer or a portion thereof which meets the criteria established in this section for a USDW may be determined by the division to be an "exempted aquifer" if it meets the following criteria:

(1) It does not currently serve as a source of drinking water; and

(2) It cannot now and will not in the future serve as a source of drinking water because:

(a) It is mineral, hydrocarbon, or geothermal energy producing, or may be demonstrated to contain minerals or hydrocarbons that, considering their quantity and location, are expected to be commercially producible;

(b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

(c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(d) The total dissolved solids content of the groundwater is more than 3,000 mg/l, and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

Section 4. Requirements Applicable to Class II Well Permits. Authorization to inject fluids through a Class II well shall be conditioned upon compliance with the following requirements:

(1)(a) The owner or operator shall promptly notify the director in writing of any modification in the manner in which the injection operation is conducted or of any mechanical failure or downhole problem encountered in the operation of the Class II well or upon recognition of a failure in an injection system.

(b) The well or wells which appear to be leaking shall be shut down immediately and correction procedures shall be initiated within fifteen (15) days, or the permit to inject may be revoked under appropriate conditions.

(c) The prescribed notice to the director shall describe all proposed modifications or corrective actions and shall be subject to the approval of the director.

(2) The owner or operator shall afford the director, or his authorized representative(s) upon proper presentation of credentials, access to Class II wells and related facilities for the purpose of

conducting inspections, witnessing mechanical integrity tests, implementing corrective action operations and plugging procedures, and testing samples of injected fluids.

(3)(a) The owner or operator shall regulate the injection pressure in a manner so that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the confining zone that would cause the movement of injected fluids into a USDW.

(b) The division may, if necessary to ensure compliance with this requirement, establish limitations on the wellhead pressure at which a Class II well may be operated.

(c) Any limitation shall be included as a permit condition or through an order issued after notice and opportunity for hearing.

(4)(a) The owner or operator shall provide for the mechanical integrity of the well by operating without leaks in the casing, tubing, or packer and without fluid movement into a USDW through vertical channels adjacent to the well bore.

(b) The owner or operator shall, upon request of the division, conduct tests of the mechanical integrity of the Class II well, utilizing a method approved by the division as required in Section 6 of this administrative regulation.

(c) Each Class II well shall be tested for mechanical integrity at least every five (5) years pursuant to Section 6(6) of this administrative regulation.

(d) An alternative mechanical integrity test authorized by the division shall be approved by the administrator.

(5)(a) The owner or operator shall monitor and record injection pressures rates and volumes at least monthly and shall submit on a completed and notarized [~~the~~] Annual Disposal or Injection Well Monitoring Report, Form OG[~~ED~~]-18 provided by the division, an annual report of the results of monitoring to the division.

(b) The owner or operator shall retain all these records on file for a period of five (5) years.

(c) The owner or operator of hydrocarbon storage or enhanced recovery wells may monitor them by manifold monitoring on a field or project basis rather than on an individual well basis if the facilities consist of more than one (1) injection well, operated with a common manifold, and provided the owner or operator demonstrates to the division that manifold monitoring is equivalent to individual well monitoring.

Section 5. Construction Requirements for Class II Wells. (1)(a) A class II injection well proposed to be constructed after the effective date of primacy shall be constructed in accordance with applicable provisions of KRS 353.570(1) and (2) and 805 KAR 1:020 in a manner that shall prevent injected fluids from escaping to a USDW.

(b) Existing Class II wells authorized by EPA are exempt from this requirement unless the division determines that corrective action is necessary to prevent injected fluids from escaping to a USDW.

(c)1. A freshwater string of casing shall extend fifty (50) feet below the freshwater depth stated on the permit or the base of the deepest fresh water, whichever is greater.

2. All freshwater casing strings shall have cement circulated to fill the annular space of the casing.

3. This casing shall be cemented, using approved engineering methods to assure the circulation of the cement to the surface.

4. The long string of casing shall extend at least from the surface to immediately above the injection interval, and shall have a minimum of 300 feet of cement behind the lowermost 300 feet of casing.

5. If the fresh water is not protected by a separate string of casing, then the long string shall be cemented with circulation of cement back to surface.

(d) Tubing shall be installed in the casing with a packer set at a depth not to exceed fifty (50) feet above the injection zone.

(e) The owner or operator shall provide a detailed description of the casing plan on the Casing and Cementing Plan for UIC Wells, Form ED-25, and submitted with the Class II Well Permit Application for Underground Injection Control, Form OG[~~ED~~]-14 for permit to inject.

(f) The casing plan shall be approved by the director and shall include a listing of the casing size, type, grade, depth of each casing string, and the class and volume of the cement to be used.

(2)(a) An active oil and gas well or an abandoned or plugged well reopened for the purpose of conversion to a Class II injection well[~~,~~] shall satisfy the requirements for cementing of a Class II well.

(b) If perforation of existing casing is required to satisfy the cementing requirements during the conversion of the well to a Class II well, a tubing and packer shall be installed in the existing casing to the area immediately above the injection interval, not to exceed fifty (50) feet above the injection interval.

(3) A Class II disposal well shall be designed to ensure that disposal zones are hydraulically isolated from USDW.

(4) The owner or operator shall provide the division with all required geophysical logs and results of tests conducted during the drilling and completion of a Class II well that specifically relate to the USDW, the confining zone adjacent to it, and the injection and adjacent formations, and shall include the following:

(a) A geophysical log marked to indicate all fresh water zones, the confining zone and the injection interval;

(b) A geologic description of the confining and injection zone that shall include the lithologic description, geologic name, and thickness; and

(c)1. A report describing the nature of fluids and formation pressure in the injection zone.

2. This information may be obtained from geophysical logs, physical examinations of samples and cores, and chemical analysis, and shall be prepared by a professional geologist registered in the state of Kentucky.

3. The owner or operator may substitute information from nearby wells if comparable to the injection well, and in the case of an area permit, if sufficient information is available from wells within the field to adequately describe the whole field.

Section 6. Mechanical Integrity Requirements for Class II Injection Wells. (1)(a) Operators shall demonstrate mechanical integrity of new and existing Class II injection wells.

(b) The owner or operator shall submit a plan to demonstrate mechanical integrity with the application for permit to inject.

(2) An injection well is determined to have mechanical integrity if:

(a) There are not leaks in the casing, tubing, or packer; and

(b) There is not fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

(3) One (1) of the following methods shall be used to evaluate the absence of significant leaks under subsection (2)(a) of this section:

(a) Following an initial pressure test, performed with liquid or gas, monitoring of the tubing and casing annulus pressure with sufficient frequency to be representative, as determined by the

division, while maintaining an annulus pressure different from atmospheric pressure measured at the surface;

[~~(b) A pressure test shall be performed with liquid or gas;~~] or

(b)[~~(c)~~] Records of monitoring demonstrating the absence of significant changes in the relationship between injection pressure and injection flow rate for the following Class II enhanced recovery wells:

1. Existing wells completed without a packer provided that a pressure test has been performed and the data is available and provided further than one (1) pressure test shall be performed at a time when the well is shut down and if the running of the test does not cause further loss of significant amounts of oil or gas; or

2. Existing wells constructed without a long string casing but with surface casing, which terminates at the base of fresh water, provided that local geological and hydrological features allow this construction and provided further that the annular space shall be visually inspected. For these wells, the division shall prescribe a monitoring program, which shall verify the absence of significant fluid movement from the injection zone into an USDW.

(4) One (1) of the following methods shall be used to confirm the absence of fluid movement under subsection (2)(b) of this section:

(a) The results of a temperature log, [~~or~~] noise log, or cement bond log;

(b) Cementing records demonstrating the presence of adequate cement to prevent a migration; or

(c) other methods approved by the director [~~administrator~~].

(5)(a) The mechanical integrity test shall be performed on the annulus of the tubing and casing.

(b) A minimum pressure of 300 psi shall be applied to the annulus of the tubing and casing.

(c) The well is considered to have mechanical integrity if, at the end of thirty (30) minutes, there is no more than a plus or minus of three (3) percent change of the test pressure on the gauge.

(d) A mechanical integrity test shall be witnessed and approved by a division field inspector.

(e) The division may require higher test pressures to be used when the anticipated injection pressure will be high.

(f) In the event a mechanical integrity test failure occurs, the owner or operator shall initiate corrective measures within thirty (30) days of the initial failure and perform a follow-up test within thirty (30) days after the completion of corrective measures. Should the corrective measures require removal of the packer from the wellbore, the owner or operator shall submit a completed and notarized Class II Well Re-Work Report, Form OG-4 documenting the work performed.

(g) The test results shall be filed on the Certification [~~Certificate~~] of Mechanical Integrity, Form OG[~~ED~~]-22.

(6)(a) The owner or operator of a Class II well shall schedule at five (5) year intervals or less, a mechanical integrity test as described in subsection (5) of this section.

(b) The owner or operator shall certify the test results to the division in writing within fifteen (15) days of completion of the test.

(7)(a) The owner or operator shall not perform a mechanical integrity test of a Class II well without giving written notice to the division on the Application for Class II Internal Mechanical Integrity Test, From OG-44 within fifteen (15) calendar days prior to the proposed test date.

(b)The division shall then notify the owner or operator of the earliest possible date available to test the well.

Section 7. Area of Review for Class II Wells. The owner or operator shall supply the following information if applying for a permit to inject pursuant to Section 11 of this administrative regulation:

(1) A description of the area of review which shall be determined by:

(a) A fixed radius of one-fourth (1/4) mile around the injection well, or one-fourth (1/4) mile around the permit area boundary; or

(b) The zone of endangering influence calculated in accordance with 40 C.F.R. 146.6 for an area of review less than one-fourth (1/4) mile.

(2) A map showing the following information within the area of review:

(a) Existing producing wells, injection wells, abandoned wells, dry holes, and water wells;

(b) Surface and subsurface mines, quarries and other pertinent surface features including residences, roads, and faults; and

(c) The distribution manifold applying injection fluid to all wells in the area of review including all system monitoring points, for those injection wells, if operating from a common manifold;

(3) The following data for wells within the area of review:

(a) A tabulation of data, reasonably available from public records or otherwise known to the applicant, including a description of well type, construction, date drilled, location, depth, record of plugging or completion, and applicable additional information; and

(b) The record of completion and plugging for each well which penetrates the injection zone, and any other wells within the area of review wells which would be affected by any proposed increase in pressure if the injection well is to be operated over the fracture pressure of the injection formation; and

(4)(a) For wells in the area of review which are improperly sealed, completed, or abandoned, a corrective action plan which consists of steps or modifications as necessary to prevent movement of fluid into underground sources of drinking water.

(b) The division shall consider the following criteria and factors during evaluation of the corrective action plan:

1. Nature and volume of injected fluids;

2. Nature of native fluids or by-products of injection;

3. Potentially affected population;

4. Geology;

5. Hydrology;

6. History of injection operations;

7. Completion and plugging records;

8. Plugging procedures upon abandonment; and

9. Hydraulic connections with underground sources of drinking water.

Section 8. Financial Responsibility. (1) The owner or operator of all Class II wells shall demonstrate financial responsibility to plug and abandon a well based on projected plugging cost estimates on the Class II Plugging and Abandonment Plan, Form OG-41. The form shall be reviewed for completeness and adequacy to protect the USDW as determined by the division.

(a) Financial responsibility of existing Class II wells prior to the date of primacy shall be submitted to the division pursuant to Section 9 of this administrative regulation.

(b) The owner or operator of a Class II well authorized by a permit to inject pursuant to this administrative regulation shall, upon application, demonstrate financial responsibility and submit the plugging abandonment plan in accordance with 805 KAR 1:060 [~~or 805 KAR 1:070~~].

(2)(a) [~~The owner or operator shall provide financial coverage to adequately plug the well pursuant to the individual well bond requirements of KRS 353.590(5).~~

~~(b)1.~~] If the division issues a letter of violation, forfeits the individual bond, and subsequently plugs the well, the owner or operator shall be responsible for any additional costs expended by the division for plugging the well which exceeds the bond amount.

(b)[~~2.~~] These costs, if not paid, shall be recovered by civil suit pursuant to KRS 353.180(3).

(c)[~~3.~~] In addition to the recovery of costs, the owner or operator shall be subject to penalties as prescribed in KRS 353.992.

Section 9. Transitional Requirements for Owner or Operators of Class II Wells.

(1)(a) The division shall accept a Class II well permit, including rule authorized wells, issued under the authority of the EPA administered program. Rule authorized wells shall be deemed permitted by the division, provided the owner or operator satisfies the requirements this section.

(b) The division shall:

1. Accept records from EPA of all authorized wells; and

2. Create an inventory of approved existing wells.

(c) The financial responsibility demonstration required in Section 8 of this administrative regulation and the submission of the plugging and abandonment plan in Section 10 of this administrative regulation shall be completed within ninety (90) days following the effective date of primacy.

(d) If the existing bond posted with EPA meets the requirements of Section 8 of this administrative regulation and is transferable to the division, the transfer of the bond shall be accepted by the division.

(2)(a) The owner or operator of a Class II well having a mechanical integrity test approved by EPA shall remain on the same schedule of mechanical integrity tests[~~,~~] upon the effective date of primacy.

(b) A copy of all documents showing approval by EPA of the well's mechanical integrity and a copy of all forms, test data, and logs required by and submitted to EPA shall be submitted to the division within ninety (90) days of the effective date of primacy.

(3) The owner or operator with a pending application submitted for Class II wells under the EPA program may transfer a pending application to the division and shall satisfy the permitting requirements in Section 11 of this administrative regulation upon the effective date of primacy.

Section 10. Plugging and Abandonment of Class II Wells. (1) A Class II well shall be plugged in accordance with 805 KAR 1:060 [~~or 805 KAR 1:070, whichever is applicable~~].

(2) The owner or operator shall provide a detailed description of the proposed plugging procedure and costs on the Class II Plugging and Abandonment Plan, Form OG-41, and submitted for approval with a completed and notarized Class II Well Permit Application for Underground Injection Control, Form OG-14 for permit to inject.

(3) The owner or operator shall notify the division in writing thirty (30) days prior to plugging and shall schedule with the division inspector a time and date for performing the plugging procedure.

(4)[~~(3)~~] The inspector shall schedule the earliest date available.

(5)[~~(4)~~] Upon completion of the plugging, the owner or operator shall file a plugging affidavit on "Affidavit to Time and Manner of Plugging and Filling Well" Form OG-38, incorporated by reference in 805 KAR 1:060 [~~Form ED 38~~].

(6)[~~(5)~~] After cessation of operations of two (2) years, the owner or operator shall plug and abandon the well in accordance with the plan, unless a notice is sent to the division describing actions

or procedures that the owner or operator shall take to ensure that the well will not cause the endangerment of a USDW during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the division.

Section 11. Requirements for a Permit to Inject into a Class II Well. All persons seeking a permit to inject into a Class II well shall, after the effective date of primacy, comply with the requirements of this section.

(1) A person shall not inject fluids into the subsurface through a Class II well without obtaining a permit to inject.

(2) An application for a permit to inject shall be submitted on form OG[~~ED~~]-14 and shall include:

(a) A statement by the owner or operator as to whether the well will be used for enhanced recovery, hydrocarbon storage, or for disposal purposes;

(b) The approximate depth of the deepest known freshwater zone.

(c) In accordance with 805 KAR 1:030, a location plat for a permit to inject into a Class II injection well.

(d) An area of review map prepared on a 7.5 minute quadrangle topographic map and including:

1. The location of all known freshwater wells;

2. The location and completion or plugging record of all wells, whether producing or plugged;

3. The location of hazardous waste treatment or disposal facilities;

4. The location of rivers or streams;

5.The location of quarries and surface and subsurface mines;

6. The location of faults; and

7. The location of permanent residences;

(e) A schematic diagram of the well showing the following:

1. The total depth of the plugback of the well;

2. The depth of the injection or disposal interval;

3. The geological name of the injection or disposal zone;

4. The geological name, thickness, and description of the confining zone;

5. The vertical distance separating the uppermost extremity of the injection zone from the base of the lowest USDW;

6. The depth of the top and the bottom of the casing and the cement;

7. The size of the casing and tubing and the depth of the packer; and

8. The depth to the base of the lowermost underground source of drinking water;

(f) For the conversion of an existing well, a copy of the completion report and any available geophysical log of the well;

(g) Proposed operating data as follows:

1. The geological name, depth, and location of the source of the injection fluid;

2. A standard laboratory analysis of a representative sample of the fluid to be injected under the proposed Class II permit, with the following parameters, as contained in 40 C.F.R. 136.3 and 40 C.F.R. Part 261 Appendix III:

a. Barium if sulfate is less than 500 mg/l;

b. Calcium;

c. Total Iron;

d. Magnesium;

e. Sodium;

f. Bicarbonate;

g. pH;

h. Specific Gravity;

i. Carbon Dioxide;

j. Total Dissolved Solids; and

k. Hydrogen Sulfide if H2S odor is detected.

3. A material safety data sheet for inhibitors if added to the injection fluid for control of scaling, corrosion, or bacterial growth;

4.a. The nature of the annulus fluid to be used in the annulus between the tubing and casing.

b. This description shall include the type of fluid to be used and the corrosivity of the annulus fluid.

c. The amount of inhibitor to be added shall be listed;

5. The proposed maximum injection rate and pressure. The owner or operator shall limit injection pressure to either a value:

a. That does not exceed a maximum injection pressure at the wellhead calculated to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to an underground source of drinking water and will not cause the movement or injection of fluids into an underground source of drinking water; or

b. For wellhead pressure calculated by using the following formula: Pmax = (0.733 psi/ft - (.433 psi/ft (Sg)))d, Where: Pmax = Maximum injection pressure (psia) at the wellhead; Sg = Specific gravity of the injected fluid; and d = Depth to the top of the injection zone in feet;

c. Alternate maximum injection pressures calculations may be utilized using instantaneous shut-in pressures recorded after stimulation treatments in adjacent wells in the same formation as the proposed injection zone;

(h) The location and description of each underground source of drinking water through which the well would penetrate;

(i) A description of the current or proposed casing program on the Casing and Cementing Plan for UIC Wells, Form ED-25, including the following:

1. Casing size, weight, and type;

2. Cement volume and type; and

3. Packer type;

(j) A description of all proposed stimulation programs;

(k) A description of proposed plans to cope with all shut-ins or well failures, so as to prevent migration of fluids into any underground source of drinking water;

(l) If a manifold monitoring program is utilized, a description of the program and a demonstration equivalence to individual well monitoring.

(m) A corrective action plan, which shall be submitted for all wells within the area of review as required in Section 7(4) of this administrative regulation;

(n) A demonstration of financial responsibility as required in Section 8(2) of this administrative regulation and a plugging and abandonment plan as required in Section 10 of this administrative regulation; and

(o) The plan by the owner or operator of mechanical integrity. Each well shall be tested for mechanical integrity using the method as described in Section 6(5) of this administrative regulation.

(3) An application for permit shall be signed by the owner or operator of the injection well, including corporate officers, general partners, sole proprietors, or other persons authorized to execute documents on behalf of the applicant.

(4) With respect to an application, a Class II Well Permit Application for Underground Injection Control, Form OG[~~ED~~]-14, for a Class II well, an applicant shall personally or by certified mail submit a written notification describing the proposed well to each of the following persons, if the described property is located within one-quarter (1/4) mile of the proposed well:

(a) The owner or operator of each well for oil and gas purposes, including a well having temporary abandonment status under this administrative regulation or not yet in production;

(b) The permittee of an underground mine permitted under KRS Chapter 350; and

(c) Each owner of rights to surface or subsurface property that the well penetrates.

(5)(a)1. The notification required under this subsection shall specify that a person who wishes to object to issuance of the permit shall, within thirty (30) days of receipt of the notification, submit written comments or request a hearing.

2. The notification shall include the address to which written comments or the hearing request shall be forwarded and where additional information may be obtained.

(b)1. In addition to the notification required under this subsection, the applicant shall cause a notice of a permit application to be placed in a newspaper of general circulation in the county where the proposed well is located.

2. Individual and publication notices shall include:

a. The name and address of the applicant;

b. The location of the proposed well;

c. The geological name and depth of the injection zone;

d. The maximum injection pressure; and

e. The maximum rate of barrels each day.

3. The notice shall specify that a person who wishes to object to issuance of the permit may, within thirty (30) days of publication of the notification, submit written comments or request a hearing.

4. The notification shall include the address to which the written comments or hearing requests shall be forwarded, how a person may receive written notice of the proceedings, and where additional information concerning the proposed permit may be obtained.

5. Proof of service of the notification required in this subsection shall be delivered to the division before a permit for a Class II well shall be issued.

(6)(a) The owner or operator shall verbally notify field inspectors five (5) days before all mechanical integrity tests are performed.

(b) A written notice shall be given to the division fifteen (15) days before the tests are performed as required in Section 6(7) of this administrative regulation.

(7)(a) The permit to inject into a Class II injection well shall remain valid for the life of the well or project.

(b) The permit may be terminated if the well or project is in violation of this administrative regulation and applicable provisions of KRS Chapter 353.

(c) The owner or operator shall comply with the requirements of all applicable administrative regulations.

Section 12. Completion and Monitoring Reports. (1) The owner or operator shall upon completion of construction of a Class II well file with the division a completed and notarized

Certificate of Completion for an Injection Well, Form ED-23, within ninety (90) days of final construction.

(2)(a) The owner or operator shall file an annual report of monthly monitoring of injection fluid volumes, injection pressure, and casing annulus pressure on Annual Disposal or Injection Well Monitoring Report, Form OG[~~ED~~]-18, on the twenty-eighth day of January for the previous twelve (12) months.

(b) The owner or operator shall retain all records on file for a period of five (5) years.

(c) The owner or operator of a liquid hydrocarbon storage or enhanced recovery well may monitor them by manifold monitoring on a field or project basis rather than on an individual well basis if the facilities:

1. Consist of more than one (1) injection well;

2. Operate with a common manifold; and

3. Provided the owner or operator demonstrates to the director that manifold monitoring is equivalent to individual monitoring.

(3) The owner or operator [~~permittee~~] of a Class II injection well shall notify the director in writing within thirty (30) days of the termination of operations at which time the permit to inject shall expire.

Section 13. Workover of Class II Wells. (1) The owner or operator shall notify the division within ninety (90) days of a well workover, logging, or testing that may reveal downhole conditions.

(2) The owner or operator shall submit a Well Rework Report, Form OG[~~ED~~]-4, documenting the activity within thirty (30) days following the completion of the rework.

(3) If the packer unseats during the workover, a mechanical integrity test shall be conducted under the provisions of Section 6 of this administrative regulation.

(4) Injection shall not be allowed until an approved mechanical integrity test has been performed.

Section 14. Procedures for Public Participation in Enforcement Actions. Upon receiving a complaint from the public, interested parties or others, the division shall:

(1) Investigate and provide written response to all citizen complaints submitted regarding any concerns for the endangerment of an underground source of drinking water;

(2) Not oppose intervention by any citizen when permissive intervention is authorized pursuant to KRS 353.180(3).

(3) Publish notice of and provide at least thirty (30) days for public comment on any proposed settlement of a division enforcement action beyond the forfeiture of a bond for a Class II well.

Section 15. Confidentiality of Information. (1) Information submitted to the division pursuant to this administrative regulation may be claimed as confidential by the submitter. A claim of confidentiality shall be asserted upon submission in the manner prescribed on the application form or instructions. Other submissions shall be stamped with the words "confidential business information" on each page containing confidential information. If a claim is not made at the time of submission, the division may make the information available to the public without further notice.

(2) Claims of confidentiality shall not apply to:

(a) The name and address of any permit applicant or permittee;

(b) Information regarding the existence, absence, or level of contaminants in drinking water; and

(c) Records directly by statute to be disclosed or published.

Section 16. Penalties. An owner or operator in violation of the requirements of this administrative regulation shall be subject to the penalties established in KRS 353.992.

Section 17. Primacy. The provisions of this administrative regulation shall become effective upon the date of primacy, on or after which a Class II well shall be subject to the requirements of this administrative regulation and shall be exempt from Sections 4, 5, and 6 of 805 KAR 1:020.

Section 18. Incorporation by Reference. (1) The following material is incorporated by reference:

(a) "Class II Well Rework Report," Form OG-4, June 2019 [~~ED-4, August 2007~~];

(b) "Class II Well Permit Application for Underground Injection Control," Form OG-14, June 2019 [~~ED-14 August 2007~~];

(c) "Annual Disposal or Injection Well Monitoring Report," Form OG-18, June 2019 [~~ED-18, August 2007~~];

(d) "Certification of Mechanical Integrity," Form OG-22, June 2019 [~~ED-22, August 2007~~];

(e) "Certificate of Completion for an Injection Well," Form OG-23, June 2019 [~~ED-23, October 2007~~];

(f) "Casing and Cementing Plan for UIC Wells," Form OG-25, June 2019 [~~ED-25, October 2007~~];

(g) "Well Transfer for UIC Wells," Form OG-26, June 2019 [~~ED-26, October 2007;~~ ~~and~~]

(h) [~~"Affidavit to Time and Manner of Plugging and Filling Well," Form ED-38, October 2007.~~]

"Class II Plugging and Abandonment Plan", Form OG-41, June 2019; and

(i) "Application for Class II Internal Mechanical Integrity Test, Form OG-44, June 2019.

(2) These forms may be inspected, copied, and obtained, subject to applicable copyright law, at the Division of Oil and Gas [~~Conservation~~], 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m.

805 KAR 1:110 approved for filing.
Pages (1-27)

7/10/2019

Date

Charles G. Snavely, Secretary
Energy and Environment Cabinet

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on August 22, 2019 at 5:00 P.M. (Eastern Time) in Training Room C of the Energy and Environment Cabinet at 300 Sower Blvd, Frankfort, Kentucky. Individuals interested in being heard at this hearing shall notify this agency five workdays prior to the hearing, of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be cancelled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted through August 31, 2019. Send written notification of intent to attend the public hearing or written comments on the proposed administrative regulation to the contact person.

CONTACT PERSON: Michael Mullins, Regulation Coordinator, 300 Sower Blvd, Frankfort, Kentucky 40601, phone: (502) 782-6720, fax: (502) 564-4245, email: michael.mullins@ky.gov.

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Administrative Regulation No.: 805 KAR 1:110
Contact Person: Michael Mullins

Contact number: (502) 782-6720
Email: michael.mullins@ky.gov

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation establishes requirements for the drilling, casing, operation, plugging, construction, conversion, and maintenance of Class II wells and the protection of fresh water zones from contamination associated with the production of oil and gas.

(b) The necessity of this administrative regulation: This administrative regulation is necessary to establish requirements for Class II wells.

(c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 353.592 authorizes the department to develop a regulatory program for the purpose of accepting primary responsibility for the administration of the Underground Injection Control Program (UIC). This administrative regulation conforms to the authorizing statutes by providing details related to the UIC program.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation assists in the effective administration of the statutes by providing the necessary information for a complete regulatory program for an UIC program.

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: This amendment provides information on what happens if a mechanical integrity test (MIT) results in a failure, provides that an UIC operator shall provide full cost bonding as required by the US EPA, and incorporates new forms.

(b) The necessity of the amendment to this administrative regulation: This amendment is necessary to make needed updates to the UIC program related to MIT tests.

(c) How the amendment conforms to the content of the authorizing statutes: The amendment conforms to the authorizing statues by updating information required for the UIC program as authorized by KRS 353.592.

(d) How the amendment will assist in the effective administration of statutes: These amendments assist in the effective administration of the statutes by making corrections to the administrative regulation and updating information related to MITs.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation. There are approximately 1,060 active oil

and gas operators in the Commonwealth. Any of these operators could drill a Class II injection well. Currently there are approximately 350 UIC operators in the Commonwealth.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: The regulated entities identified in question (3) will be required to use a new form for reporting as well as a form for requesting MITs.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): The amendments to this administrative regulation will not increase the cost to the regulated entities.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): As a result of compliance, entities will have a new form for reporting proposed plugging procedures and the associated cost. Also, the information related to a MIT failure is established in the administrative regulation.

(5) Provide an estimate of how much it will cost to implement this administrative regulation:

(a) Initially: The division will not incur any additional costs for the implementation of this administrative regulation. The division is already monitoring MITs.

(b) On a continuing basis: The division will not incur any additional costs for the implementation of this administrative regulation. The division is already monitoring MITs.

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation: A combination of general and restricted funds will be used for the implementation of this administrative regulation.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment. This administrative regulation does not increase any fees.

(8) State whether or not this administrative regulation establishes any fees or directly or indirectly increases any fees. This administrative regulation does not establish any fees.

(9) TIERING: Is tiering applied? (Explain why tiering was or was not used.)
No, tiering was not used. The provisions in this administrative regulation will apply equally to all oil and gas operators who own or operate Class II injection wells.

FISCAL NOTE ON STATE AND LOCAL GOVERNMENT

Administrative Regulation No.: 805 KAR 1:110
Contact Person: Michael Mullins

Contact number: (502) 782-6720
Email: michael.mullins@ky.gov

1. What units, parts or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation?
This administrative regulation applies almost entirely to the Division of Oil and Gas.

2. Identify each state or federal statute or federal regulation that requires or authorizes action taken by the administrative regulation. KRS 353.540, 353.550, 353.560, and 353.592.

3. Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the regulation is to be in effect.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year? The proposed administrative regulation will not generate revenue in the first year.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years? The proposed administrative regulation will not generate revenue in subsequent years.

(c) How much will it cost to administer this program for the first year? There are no additional costs associated with the amendments to this administrative regulation.

(d) How much will it cost to administer this program for subsequent years? There are no additional costs associated with the amendments to this administrative regulation.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impacts of the administrative regulation.

Revenues (+/-):	There is no known effect on current revenues.
Expenditures (+/-):	There is no known effect on current expenditures.
Other Explanation:	There is no further explanation.

SUMMARY OF MATERIAL INCORPORATED BY REFERENCE
805 KAR 1:110

This administrative regulation incorporates the following documents:

I. Class II Well Rework Report, Form OG-4, (June 2019) This form is submitted by the owner or operator of a UIC well to the division when changes are made to a well that is already drilled and permitted. This is a new form and consists of 1 page.

II. Class II Well Permit Application for Underground Injection Control, Form OG-14, (June 2019) This form is submitted by individuals to apply for a UIC well permit. This is a new form and consists of 4 pages.

III. Annual Disposal or Injection Well Monitoring Report, Form OG-18, (June 2019) This form is submitted by UIC well owners or operators on an annual basis to report on the status of their UIC wells. This is a new form and consists of 1 page.

IV. Certification of Mechanical Integrity, Form OG-22, (June 2019) This form is submitted by an owner or operator of UIC wells when a mechanical integrity test is performed. This is a new form and consists of 1 page.

V. Well Transfer for UIC Wells, Form OG-26, (June 2019) This form is submitted by owner or operator of UIC wells when a transfer of UIC wells is requested. This is a new form and consists of 1 page.

VI. Class II Plugging and Abandonment Plan, Form OG-41, (June 2019) This form is provided for Class II well operators to report plugging and abandonment. This is a new form and consists of 2 pages.

VII. Application for Class II Internal Mechanical Integrity Test, OG-44, (June 2019) This form is provided for well operators to request the division to witness an internal mechanical integrity test. This is a new form and consists of 1 page.